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ABSTRACT

The problem of this study was concerned with instruction in reading rate acceleration and the effects upon comprehension. Correlates of reading achievement, sex, IQ, age, and interest were also considered. A six-week reading rate training program was completed by the three experimental classes randomly selected in each of grades two, four, and six in Havre, Montana, schools. Standardized pre-tests and post-tests of reading rate and comprehension were administered to the nine experimental classes and nine control classes, involving 407 students. Results indicated that pupils in the grade two experimental group made a significant gain in comprehension following six weeks of reading rate training. Variation of age within the second grade experimental group showed an inverse relationship to comprehension gain. In grade four the experimental group evidenced both a rate and comprehension gain significant at the five percent level of significance. When the groups were equated on the variable of IQ, the significant differences on rate and comprehension in grades two and four remained. None of these differences appeared to be differentiated by the sex variable or affected by the interest factor during the rate training period. (Author/WR)

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AN ANALYSIS OF A READING RATE IMPROVEMENT PROGRAM IN GRADES TWO, FOUR, AND SIX

by

SYLVIA LOUISE THOMAS

A thesis submitted to the Graduate Faculty in partial fulfillment of the requirements for the degree

of

DOCTOR OF EDUCATION

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VITA

Sylvia Louise Thomas was born in Squirrel, Idaho, on October 9, 1922, to Roy and Lucy Moore, both of whom had homesteaded there. When she was five years old the family moved to Montana.

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Another graduate studies program was completed at Montana State University in August 1972. She received the Doctor of Education degree.

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ABSTRACT

The problem of this study was concerned with instruction in reading rate acceleration and the effects upon comprehension. Correlates of reading achievement, sex, IQ, age, and interest were also considered.

A six weeks reading rate training program was completed by the three experimental classes randomly selected in each of grades two, four, and six in Havre, Montana, schools. Standardized pre and post-tests of reading rate and comprehension were administered to the nine experimental classes and nine control classes, involving 407 students, in September and November 1970, and May 1971.

A two-way analysis of variance was employed to determine whether or not a significant difference existed between the rate and comprehension gains of the experimental and control groups. For the purpose of statistically controlling the variable of IQ, the analysis of covariance was used. The t test for correlated samples was employed to determine whether or not a significant difference existed between the means of the November and May post-test gains. Coefficients of correlation (r) were computed and compared to the tabled value of r within each grade level between reading rate gain and comprehension; between interest in rate improvement and reading gain; between chronological age and comprehension gain; and between age and rate gain.

Results of this study indicated that pupils in the grade two experimental group made a significant gain in comprehension following six weeks of reading rate training in autumn. Variation of age within the second-grade experimental group showed an inverse relationship to comprehension gain. As the chronological age increased, comprehension decreased. In grade four the experimental group evidenced both a rate and comprehension gain significant at the five percent level of significance. When the groups were equated on the variable of IQ, the significant differences on rate and comprehension in grades two and four remained. None of these differences appeared to be differentiated by the sex variable or affected by the interest factor during the rate training period. Furthermore, these differences were not shown to have declined between November and May. No correlation was found to exist between rate gain and comprehension gain at any grade level in the experimental group. However, an inverse correlation was found to exist between rate gain and comprehension gain among subgroups of the second-grade and sixth-grade control group.

CHAPTER I

THE PROBLEM

Introduction

Several writers have pointed out that much controversy exists regarding the effect of speed, or rate of reading, upon the amount of comprehension obtained during rapid reading. According to Hamilton (1939:2) considerable variation in the teaching of reading existed in the elementary school. Carillo (1965) found that little emphasis was given to training in rate of reading in the elementary schools, particularly in the primary grades.

When questioned about their reading rate by the investigator during a three year period, few college freshmen were aware of their proficiency in rapid reading or of their lack of proficiency. Many veteran elementary teachers, attending college classes to up-date their credentials, when asked by the researcher, did not know either their own minimum and maximum reading speeds or the appropriate reading rates for the pupils in the grade levels at which they taught. Therefore, such teachers probably do not give adequate attention to the rate improvement of their students. Weintraub (1968) recommended that a deficiency of this type should not continue.

One is, therefore, lead to wonder whether increasing the rate of reading would benefit or handicap the student in terms of comphrehension of reading content. In this study the importance to comprehension increase of direct teaching to produce reading rate improvement was considered.

Statement of the Problem

The problem of this study was concerned with whether or not periods of instruction and practice in reading rate increase would effect a significant improvement in comprehension. What were the effects of rate training, which was administered daily during six weeks of school in autumn, upon reading comprehension among selected elementary school children in Havre, Montana? Did variation in speed of silent reading show a positive or negative change in comprehension gained by the reader?

Furthermore, were autumn gains in comprehension and speed resulting from the rate training increased, decreased, or maintained until spring?

A secondary purpose of this study was to ascertain whether differences of sex, IQ, age, or interest in reading improvement influenced rate or comprehension increase at any grade level.

Need or Purpose of the Study

According to Holmes (1962:143), the need is very real in our society to learn to read faster since many people are confronted daily with an immense and deterring amount of reading material to process. Therefore, teaching children to read as rapidly and efficiently as they are capable of doing is very important.

Little attention has been given to guiding children to increase their rate of reading in the initial reading program in first grade. Practically no drill or directions have been given to second-grade children to read as fast as they can. Weintraub (1968) found that a smattering of speed drills and suggestions about taking less time to read a passage may be offered in the intermediate grades.

*Following a survey of reading textbooks the investigator concluded that publishers of reading textbook series ignored the rate factor in materials prepared for primary grades. The importance of rapid reading was not emphasized in materials which were prepared for the intermediate grades. Some series failed to mention rate improvement.

*The reading textbook series surveyed have been listed in the bibliography.

Hadley (1957) stated that many college students cannot read efficiently enough to conclude a college program. Since most college students are products of the elementary school in which little emphasis upon the speed of reading has been offered, the findings and implications of this present study may be of benefit to teachers, to school administrators, and to publishers of reading textbook series as guidelines to educational change and progress.

General Questions to be Answered

Information was sought about several interesting questions pertaining to rate and comprehension of reading. When consistent teaching of skill in rapid reading occurred, was there a concomitant increase in comprehension among children participating in this study? Did increasing the rate of reading adversely affect the degree of comprehension?

Between the pre-test and post-test reading rate scores was there a significant gain per grade level in the experimental group?

Following the six weeks of rate training was a gain in comprehension shown for the experimental group by the pre and post-test scores? When no important rate increase was

measured following the rate training did an increase in comprehension result?

In which grade level was the greatest rate increase and the greatest comprehension increase accomplished?

Was improvement in speed of reading or comprehension affected by IQ score, sex, or chronological age at any grade level?

Did children in the experimental group, who rated their interest as high in reading rate improvement, excel in rate and comprehension over those children who rated their interest low?

General Procedures

During the 1970-'71 school term in Havre, Montana, selected second-grade, fourth-grade, and sixth-grade children received from their regular classroom teachers a period of instruction and practice, which was designed to increase their speed of reading, three schooldays per week. Those sessions continued for a period of six weeks during September and October. Six classes at each grade level were chosen by random selection. All children in each class participating in this study were included. The experimental group consisted of three classes at each grade level which received reading rate training for twenty minutes per day. The

control group consisted of three classes at each grade level which did not receive the rate training planned for this study.

A pattern of procedure was designed for each teacher to follow whose class was involved in this study. An example of the procedures may be found in Appendix H.

Standardized speed and comprehension reading tests were administered before and after the rate training period. Appropriate levels of the Diagnostic Reading Test published by Scholastic Testing Service (1957) were used.

In addition to the reading scores for each child, the following data were collected from the school records: name, sex, grade, IQ score, and chronological age. The children in the experimental group rated their interest in the rate training program on an interest rating scale. These data have been tabulated and analyzed by statistical procedures in seeking evidence on which to base retention or rejection of the null hypotheses.

A two-way analysis of variance was employed to determine whether or not a significant difference existed between the rate and comprehension gains of the experimental and control groups. For the purpose of statistically (rather than experimentally) controlling the variable of IQ, the analysis of covariance was used. The t test for correlated

samples was employed to determine whether or not a significant difference existed between the means of the November and May post-test gains. Coefficients of correlation (r) were computed and compared to the tabled value of r within each grade level between reading rate gain and comprehension; between interest in the rate improvement program and reading rate and comprehension gain; between chronological age and comprehension gain; and between age and rate gain. The five per cent level of significance for a two-tailed test was required by the researcher to reject a null hypothesis. A more detailed description of these procedures has been described in chapter three.

Limitations

The children participating in this study were limited to those attending the Sunnyside, Robins, Lincoln-McKinley, and Devlin schools in Havre, Montana, during the 1970-'71 school term. An assumption was that all teachers who were assisting in this study were consistent in following the rate training program exactly as it was designed for their classes.

The researcher acknowledged that some variation may have existed in the amount of rate training

received by each child resulting from absenteeism of pupils as well as from children's interest in the rate training.

Reading in specific content areas, such as mathematics and art, was not emphasized in either the rate training program or in the testing materials. An interest rating scale was administered to children in the experimental group to aid in determining the interest factor. This scale has been described more fully in chapter three and a copy may be found in Appendix G.

Definition of Terms

For purposes of this study the elementary school was considered to be grades one through six.

Reading referred only to silent reading.

Comprehension was understood to include recall of knowledge of what had been read as measured by a standardized reading test.

Rate training was described as directed guidance and specific practice in reading faster associated with teaching the method and value of increasing one's rate of reading.

Rate of silent reading was the number of words read silently per minute by each child during a standardized reading test.

Skimming was understood to be reading to gain a general impression of content without emphasis upon details.

Periods of rate training instruction for the nine experimental classes were twenty minutes per day, three days per week for six consecutive weeks in autumn.

Positive improvement was determined by the difference in the raw scores between the pre-test and post-test scores for each child. These differences have been referred to as gains.

The control group consisted of three classrooms at each grade level of grades two, four, and six which were randomly selected.

The experimental group consisted of three classrooms at each grade level of grades two, four, and six which were randomly selected.

Abbreviated Entities

Sigma is used to refer to the standard deviation of a distribution.

Degrees of Freedom are shown in tables summarizing data as df.

The Critical Ratio in the t Test for Correlated Samples is shown as t.

The Sum of Squares is represented by SS_x.

The Sum of Products is represented as SP.

The Adjusted Sum of Squares is shown as SS_y.

The Adjusted Degrees of Freedom is represented as df.

The Adjusted Mean Square is shown as MS_y.

The Critical Ratio in the two-way analysis of variance and in covariance is represented as F.

The Correlation Coefficient is referred to as r.

Summary

The need to increase one's reading rate in our present society has been pointed out as a basis for considering the merit of training children in the elementary school to improve their rate of reading. A related question considered was whether or not increasing rate of reading would favorably affect improvement in comprehension of reading content.

A six weeks rate training program was completed by the three experimental classes in each of grades two, four, and six in Havre, Montana, schools.

Pre and post-tests were administered to the nine experimental classes and nine control classes from which to determine what affect increase in speed of reading had upon comprehension improvement.

Children in the experimental group rated themselves on an interest rating scale. Information about each child

collected from school records was name, age, IQ score, and sex.

Other relationships were explored such as degree of correlation between IQ score and amount of reading rate increase and between IQ score and comprehension gain. Was a gain shown in rate or comprehension? Did interest in reading improvement promote an increase in comprehension or rate? Did variation in chronological age within each grade level relate to rate and comprehension gain?

Studies revealed that little emphasis has been given to training in rate of reading in the elementary school. Therefore, the results of this study may be of some benefit to teachers, administrators, and publishers of reading textbook series when planning for future improvement of the Havre reading program.

In the next chapter the factors of reading rate and comprehension have been described both historically and pedogogically.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

With the advent of the knowledge explosion during the mid 1900's, interest in reading at a faster rate has increased among college students and other adults (Harris, 1960). Therefore, an earlier emphasis on reading speed in the elementary schools possibly may be advantageous. Reference has been made to studies which relate to reading rate improvement during early school years.

Since many factors, such as IQ, sex, age, and interest, relate to affect pupils' progress in reading rate and comprehension, certain features have been selected for consideration in this review. First, a brief history of the inclusion of reading rate instruction in the public schools was reviewed. Various speed reading teaching practices have been described. Other traits of readers pertinent to this study, which were then surveyed, included sex, IQ, age and interest in reading rate improvement. In addition, evidence was sought for establishing the prescence of similarities in reading behavior between second-graders

and first-graders, between fourth-graders and third-graders, and between sixth-graders and fifth-graders.

Brief History of Reading Rate Training in the Public Schools

In the early 1920's O'Brien (1921:201) noted that pupils in grades three through eight read at unnecessarily slow rates. He found that their reading rate could be improved considerably in a minimum number of training sessions.

At one time, slow and laborious reading was encouraged because the belief was that an inverse relationship existed between reading speed and comprehension (O'Brien, 1921:22). However, since measures of reading speed and comprehension have been developed, educators have become aware that those who read more rapidly usually excelled in comprehension. Therefore, as Hamilton (1939:3) pointed out, both comprehension and speed are legitimate goals.

In a study dealing with reading flexibility Orem (1963) found flexible readers to have active, highly developed perceptual skills, especially when dealing with abstract ideas. Awareness that flexibility of reading rate has become one measure of reading efficiency led McDonald (1965) to recommend that teachers of developmental reading must become more proficient in assisting their pupils to develop a more flexible rate. The analysis of the data in the study done

by Thompson and Whitehall (1970) revealed that students who were classified as more flexible readers made the greatest speed gains while holding their comprehension constant.

Reading Speed and Comprehension Teaching Practices

O'Brien (1921:37-81) surveyed the literature and concluded that the following factors influence rate of reading: practice in rapid silent reading, vocalization, training in perception, type of material read, habits of eye movement, purpose for reading, concentration, visual imagery, and a desire to read rapidly.

At the University of Southern Florida Dr. Robert Zetler taught college students and faculty members to read at speeds of from 2,000 to 17,000 words per minute while improving their comprehension and retention. Dr. Zetler claimed that the method can and should be taught to young children. His nine-year-old son, who was not described as precocious, read at the rate of 1,000 words per minute (Davis, 1963).

One twenty-year-old student learned to read at the rate of 40,000 words per minute with an increase in comprehension. A five-year-old girl was reported to have reached the incredible reading rate of 6,000 words per minute in the Panoramic Reading Program. And, an eleven-year-old boy

learned to read at the rate of 123,000 words per minute (Carillo, 1965).

However, Walton (1957) noted that the physiological limitation exists which prevents reading faster than 900 words per minute when reading and comprehending most of the words on a page.

> Assuming that the reader can comprehend the maximum span of three words per fixation, and there are no regresstions, the line of ten words is read in .66 of a second, or at a rate of approximately fifteen words per second or nine hundred words per minute. Any speed greater than this involves omitting lines, the technique recognized by most authorities as skimming (Walton, 1957).

McDonald (1965) stated that a person may consciously vary his reading rate at will. A small group of fifteen fifth-grade students in McHenry, Illinois, took part in a study by Schale (1967) to determine whether adult speed reading practices could benefit them. The subjects doubled their reading speed without comprehension loss. Further similar exploration of the values of increased rate at intermediate level was recommended. Yet, elementary and high school pupils have not been taught to read at different rates for different purposes according to Weintraub (1968). Children who possess good basic reading skills are much more capable of varying their reading according to their purpose for reading than formerly had been expected possible.

Speed and span of perception appeared to develop during the elementary years. Eye movement data described by Weintraub (1968) revealed that the period of greatest development in span of recognition, speed of recognition, and regularity of eye movement comes during the first four grades. However, he found that the period for attaining speed of reading undergoes a shift from predominance of

visual-perceptual abilities at the third grade to a more equitable organization of visual perception and word meaning factors at the sixth-grade level.

Leeson (1969) believed that skimming should be taught at every grade level because he considered skimming to be good preparation, or readiness, for speed reading. He found that practice in skimming rapidly in search of one word or name, or a particular schedule on a timetable, or to find the key sentence in a paragraph was one step toward becoming a thoughtful, rapid reader.

A phenomenon reported by Berger (1970) was that many people will more than double their reading rate as a result of merely being told to do so and that most people can double their reading rate without comprehension loss.

In the studies reported between 1921 and 1970 teaching practices concerning reading rate improvement have been limited to a few scattered efforts to instruct children to increase their rate. The trend described in these experiences was one of astounding success in rate development. Less attention to comprehension in relation to rate improvement has been reported.

Influence of Sex, IQ, Chronological Age, and Interest Upon Increase in Reading Speed and Comprehension

During a study conducted by Anderson (1956) at the University of Michigan Laboratory School, children started reading when they were ready rather than in a structured situation in which everyone was introduced to reading in the first grade. When a child achieved a score of 84 months he was considered to have learned to read. The study noted sex differences in chronological age at which this score was attained. On the average, girls learned to read six months earlier than boys. However, in the high IQ group sex differences in age of learning to read disappeared (Anderson, 1956).

Reading achievement was found by Chronster (1964) to be affected by certain personality factors of which sex difference was apparent on several traits. Among these fifth-grade pupils, intelligence was a significant factor for girls. Although important to boys' achievement, intelligence appeared to be a less important trait than for girls.

Another study in which the results revealed that certain personality factors affected reading positively and these patterns differed for men and women was conducted by Neal (1968) among 517 freshmen in Illinois. Only two traits

which positively affected reading ability were found to be the same for men and women. Those two personality traits, as measured by the Minnesota Multiphasic Personality Inventory, were theoretical and literary.

Third and sixth-grade children of varying races and socioeconomic backgrounds were administered the Word Context Test by Crockett (1966) to determine the effects of age, social status, sex, and race upon word recognition independent of sentence context. There resulted a consistent sex difference in favor of the girls in the use of word-sentence fusion in the signification process.

Wyatt (1967:164) reported indications that boys as a group lag behind girls in reading achievement during the early years in school. Not all boys overcame initial learning-to-read failure. The study sought approaches to reading instruction which would utilize sex differences with an advantageous result in favor of the boys. However, there was little within groups variance among boys' scores. The means of the girls' groups were significantly higher on paragraph meaning, word study, and spelling. The conclusion was that the reading achievement lag of boys depended on something other than method of instruction.

From a comparative study of reading in the United States and Germany, Preston (1961:109) found the reverse to be true. Mean reading scores of fourth and sixth-grade German boys exceeded those of German girls. Therefore, Preston suggested that cultural and environmental factors are responsible for sex differences found in reading perforamce, such as a more predominantly male teaching staff at the elementary level being the practice in Germany.

The data collected by Herman and Crisculo (1968) also revealed opposite findings regarding reading achievement of boys. On pre-tests of inner city first year pupils where boys were grouped separately from girls, no significant sex difference was found in the experimental group. Pre-tests revealed that girls performed significantly better than boys in the control group. However, results showed that boys in both the experimental and control groups made better relative gains in reading than did girls.

Research indicates that intelligence varies more among boys than among girls. Vernon (1957:15) stated that more variability in reading ability of boys would be expected. Anderson (1957) found that in the high IQ group sex differences in age of learning to read tended to disappear.

Using a nation-wide sample involving third, fifth, and eighth-graders, Clark (1959) investigated sex differences in mental ability and achievement. Eight measures of mental ability and six measures of achievement were used. The statistical analysis was designed to eliminate effects of variation in age. In mechanics of English fifth and eighth-grade girls did better than boys. In spelling the girls had better scores at all three grade levels. Other results of the study caused Clark to conclude that sex differences in intelligence are nonexistent.

However, intelligence appeared to be a differentiating factor among several sub-skills of reading performance. One hundred ninety-one sixth-grade children were rated as superior, median, or inferior in intelligence by the Kuhlmann-Anderson Intelligence Test and the Myers Test. Rate of reading and comprehension scores were obtained through adminstration of the Monroe Silent Reading Test (Leavell, 1938). Number and length of eye fixations and number of regressions were also noted.

While levels of significance of the coefficients of correlation of reading rate and intelligence varied with the test used, the less intelligent children exhibited a fairly marked tendency to make more regressions

than the more intelligent. The superior intelligence group had a broader span of recognition than did the average group.

When the Kuhlmann-Anderson test was used as a measure of intelligence the data indicated significant differences in the median score between the superior and inferior intelligence groups in the number of fixations per hundred words, number of regressions, span of recognition, and rate of reading in favor of the superior intelligence group.

Because few studies of reading speed and comprehension had controlled the factor of intelligence or studied the relationship of speed and comprehension at different levels of intelligence, Carlson (1949) explored these dimensions. His study involved 330 fifth-grade pupils. Effectiveness in accuracy of comprehension was found to be dependent upon levels of intelligence. At the upper levels of intelligence rapid readers were the more efficient. But, at the middle and lower levels of intelligence the slower readers tended to be the better readers.

Reading interests, according to topics and content, have been shown to vary significantly in both type and amount with age, sex, and intelligence (Lyness, 1951).

Relatively few experiments related to reading speed in the elementary school have been reported. Comparatively

few studies were available which reflected chronological age as a restricting variable in reading rate improvement. All of those studies indicated that rate improvement was achieved without comprehension loss regardless of age. Neither was interest in rate improvement included in the experimental design of available studies.

No basis was found for establishing evidence of the presence of similarities in reading behavior between second and first-grade children, between fourth and third-grade children, or between sixth and fifth-grade children.

Summary

The review of the literature revealed that during this century attitude has changed regarding the possibility of more rapid reading without comprehension loss. Previously the assumption was that slow, laborious reading produced the optimum in comprehension. Recent research indicated that this assumption was incorrect and that reading rate can be increased without comprehension loss. However, comparatively few readers have attempted to reach the outer limits of reading efficiency.

Between 1921 and 1970 teaching practices concerning reading rate improvement in the studies reported have been limited to a few scattered attempts to instruct children to

increase their rate. Many of these studies have described astounding success in rate development, although some researchers pointed out a physical limitation which precludes the possibility of attaining excessive reading rates. Less attention to comprehension in relation to rate improvement has been reported. Yet, there did appear to be ample evidence that the majority of school pupils possess the latent potential to achieve faster reading speeds. Apparently the relationship between increasing the rate of reading and improvement in comprehension among elementary school children needs further clarification.

Many studies reported a sex difference in reading achievement in favor of girls. However, in Germany the boys achieved better. Therefore, what seemed to be a sex difference may have been actually a cultural or environmental difference.

IQ appeared to be a correlate of reading achievement. But, researchers were not in agreement about the importance of IQ to reading rate increase.

Numerous additional studies existed with findings similar to those reported above. Therefore, this review of the literature was not exhaustive but did describe the results most often reported.

As reflected by the portion of the literature herein reviewed, additional research pertaining to reading rate development is indicated. Description of the research procedures used in this study to further explore the relationship between rate improvement and comprehension is given in chapter three.

CHAPTER III

PROCEDURES

Introduction

The problem in this study was concerned with the question of whether or not providing reading rate training, that was designed to increase speed of reading, resulted in an increase in comprehension among selected second, fourth, and sixth-graders in Havre, Montana. A review of the literature revealed that other variables also influenced reading speed and comprehension. These variables, which were considered at each grade level, were sex, IQ score, chronological age, and interest in reading improvement.

The sampling procedure, method of collecting, analyzing, and reporting the data have been described below. A description of testing instruments, materials, and methods that were used in the rate training program is also presented below. A copy of the rate training program may be found in Appendixes A through H.

Population Description and Sampling Procedure

For purposes of this study the population was twenty-two classrooms in grades two, four, and six in Robins, Sunnyside, Lincoln-McKinley, and Devlin schools in Havre, Montana.

A random sample was selected from the population by using a table of random numbers to choose the three experimental classes and three control classes at each grade level in each school. The eighteen selected classrooms contained 469 pupils in September 1970 when the experiment began. All children in grade levels two, four, and six participated. Four hundred seven were present on the final day of testing in May 1971.

Working with samples that have been selected at random should permit generalization about the characteristics in the population. Kerlinger (1967:63) commented that, although it is not known why this principle of randomization works, the assignment of subjects to groups at random will equalize the groups for purposes of statistical analysis and inference.

The Treatment

Between September 22 and November 3, 1970, the rate training program was conducted for all of the experimental classes. This program included a consideration of the skills involved in increasing an individual's rate of reading. There was directed practice in reading faster followed by a comprehension check. Unison reading aloud of phrases

visually projected at a rate faster than the rate of ordinary speech was included.

During three mornings a week, twenty minutes were spent each morning in the nine experimental classrooms in administering the rate training program. This instruction in reading skill was in lieu of twenty minutes ordinarily allotted to reading instruction in the basal reading program, rather than constituting an additional twenty minutes of reading instruction three days per week. The control groups at each grade level spent an equal amount of time each day in reading instruction in the basal textbook reading materials but did not apply the rate training procedures.

Normally, more time per day is spent in reading periods in the second grade than in the fourth and sixth grades. However, approximately the same amount of time was spent in reading each day in the experimental and control classes per grade level. To promote consistency among groups only three days a week were used for the rate training since sometimes flexibility of daily routine required deleting some portion of the daily schedule in favor of assemblies and other activities which occurred occasionally.

The first of the rate training sessions for all nine experimental classes began the day after the pre-test.

First, a presentation was given by each teacher of the information in Appendix A regarding the importance and personal value to be derived from rapid reading. Next, the children practiced orally reading twelve phrases rapidly in unison. To facilitate speed and fluency these phrases were selected from the basic textbook series used in these classes at one grade level lower than the grade placement of the pupils. See Appendix A. The phrasing exercise was followed by a timed silent reading and written comprehension check from the appropriate level of Reader's Digest Skill Builders (1969) one of which was provided for each child participating in the experimental group. Directions to read as fast as possible and remember what was read were given. Various levels of the Reader's Digest Skill Builders were used according to the ability of the students. As a motivational device each child kept a graphic record of his progress in rate and comprehension on a chart. An example of this chart is displayed in Appendix A.

The second session in each of the nine experimental classrooms began with another presentation by each teacher of material found in Appendix A. This was followed by a rapid oral phrase drill and timed reading with a written comprehension check in the Reader's Digest Skill Builders.

During the first week on each of the three rate training days, material in Appendix A was presented, the second week material in Appendix B was used, the third week, Appendix C, the fourth week, Appendix D, the fifth week, Appendix E, and the sixth week that in Appendix F.

Method of Collecting the Data

Since other researchers have found that intelligence, age, and sex may affect reading performance, the following information about each child in the experimental and control groups was gathered from the schools' permanent records in September: name, age, sex, and IQ score.

On Tuesday, September 22 the pre-test was given and on Tuesday, November 3, 1970, and May 6, 1971, the two post-tests were given. During the morning, parts II and III of the Pupil Progress Series Diagnostic Reading Test, Form A, Level II were administered to all the second-grade experimental and control groups. Parts II and III of Elementary Form A, Pupil Progress Series were administered to all fourth and sixth-grade experimental and control groups by their classroom teachers. Sixth-graders took the test in the afternoon because departmentalization prohibited scheduling it during the morning. Any children absent those days took the test on their first day back in school.

Because there could have been some variation in children's interest in improving their rate of reading and, therefore, some resulting effect upon their performance during the rate training program, an interest inventory in the form of a five point rating scale was administered to the experimental group immediately following the six weeks of rate training. A copy of the rating scale may be found in Appendix G.

The Scholastic Testing Service, Incorporated (1957) publisher of the Pupil Progress Series, reported item validity between successive grades of at least eight per cent. This difference was significant beyond the .01 level for the sample involved of approximately 500 students at each of eight grade levels. The publisher described reliability coefficients with an average index from .35 to .60.

Buros (1965:822) reported a reliability level of the Primary II test of .95. He listed the reliability of the "Rate of Reading for Meaning" portion of the Elementary Test as about .88 for Primary II, and .94 for Elementary. For purposes of this study these levels of reliability and validity are adequate.

The standardization population selected was stratified both on geographic location and on size of school.

Norms were actually based upon the performance of 12,199 pupils representing an approximate ten per cent of the total population. The median sample size for the individual grades was 1,631 and the corresponding standard error (in terms of percentile ranks) was 1.25 points.

In December 1969, the Havre school district used the Seventh Edition of the Kuhlmann-Anderson Test, booklet CD to obtain fourth-graders' IQ scores and booklet D for the sixth-graders' IQ scores.

A correlation of .84 has been reported (Kuhlmann-Anderson, 1964) between two sets of IQ scores for a group of 169 third grade pupils who took both the Seventh Edition CD booklet and the Sixth Edition C booklet.

The validity of the Sixth Edition tests was built into the Seventh Edition. Correlations for individual items ranged from .26 to .84, with 96.5 per cent of them between .30 and .84. A correlation of .84 between the Sixth Edition and the "educational quotient" widely used on achievement batteries was noted (Kuhlmann-Anderson, 1964).

Buros (1965:468) stated that reliability coefficients are generally satisfactory if not high. Test-retest coefficients, with as much as two grades between testings, range from .83 to .92. Buros mentioned that evidence of concurrent validity is lacking in the manuals to prove that

these tests are measuring intelligence or academic potential. He added that this test does compare favorably with other competitive instruments measuring general intelligence.

IQ norm groups consisted of 15,492 pupils aged 9 to 13 from 24 communities in 19 states representing every geographic area in the United States.

The IQ of second-graders was measured by the 1957 edition of the Lorge-Thorndike Intelligence Test, level two. Norms were established by testing a stratified sample of 136,000 children from 44 communities in 22 states. A reliability correlation of .76 was found on alternate forms.

Validity correlation of the level two was .60 between the Lorge-Thorndike and Otis primary test of intelligence (Lorge, 1962).

Validity correlation of .67 between these tests and year end achievement as reported by Buros (1955:350-352), was considered adequate, but more adequate data on predictive and concurrent validity was considered desirable. This version was rated among the best group IQ tests available.

Reliability of alternate forms correlated from .76 to .90 at all levels. Odd-even reliabilities were very high (.88 to .94) with the exception of the Level Two, nonverbal section of .59.

A teacher training session was provided for all of the teachers whose classes were selected to participate in this experiment. The purpose of the training session was to familiarize the teachers with the materials to be used and to afford practice in using them. Instructions about administering the pre and post-tests were given at that time, less than one week before the beginning of the rate training in the classrooms. A more detailed description of the training session may be found in Appendix H.

Method of Organizing the Data

Information obtained from the data has been organized and summarized in tables in chapter four. Mean differences of group gains have been compared according to differences in rate by grade, sex, IQ, age, and interest; and to differences in comprehension by grade, sex, IQ, age, and interest.

Statistical Hypotheses

The null hypotheses, which this study tested, followed by alternate hypotheses, are as follows:

1. There is no significant difference between means of the comprehension gains of the experimental groups and the comprehension gains of the control groups in grades two, four, and six.

1. There is a significant difference between means of the comprehension gains of the experimental groups and the comprehension gains of the control groups in grades two, four, and six.

2. There is no significant relationship between sex and comprehension gains of the experimental groups and the comprehension gains and sex of the control groups in grades two, four, and six.

2. There is a significant relationship between sex and comprehension gains of the experimental groups and the comprehension gains and sex of the control groups in grades two, four, and six.

3. There is no significant difference between means of the reading rate gains of the experimental groups and the reading rate gains of the control groups in grades two, four, and six.

3. There is a significant difference between means of the reading rate gains of the experimental groups and the reading rate gains of the control groups in grades two, four, and six.

4. There is no significant relationship between sex and reading rate gains of the experimental groups and the reading rate gains and sex of the control groups in grades two, four, and six.

4. There is a significant relationship between sex and reading rate gains of the experimental groups and the reading rate gains and sex of the control groups in grades two, four, and six.

5. There is no significant difference between means of the comprehension gains of the experimental groups and means of the comprehension gains of the control groups in grades two, four, and six, when the two groups are statistically equated on IQ.

5. There is a significant difference between means of the comprehension gains of the experimental groups and means of the comprehension gains of the control groups in grades two, four, and six, when the two groups are statistically equated on IQ.

6. There is no significant difference between means of the reading rate gains of the experimental groups and means of the reading rate gains of the control groups in grades two, four, and six, when the two groups are statistically equated on IQ.

6. There is a significant difference between means of the reading rate gains of the experimental groups and means of the reading rate gains of the control groups in grades two, four, and six, when the two groups are statistically equated on IQ.

7. There is no significant relationship between reading rate gains and comprehension gains of the experimental groups and between reading rate gains and comprehension gains of the control groups in grades two, four, and six.

7. There is a significant relationship between reading rate gains and comprehension gains of the experimental groups and between reading rate gains and comprehension gains of the control groups in grades two, four, and six.

8. There is no significant relationship between the comprehension gains of students in the experimental groups and their interest in rate training in grades two, four and six.

8. There is a significant relationship between the comprehension gains of students in the experimental groups and their interest in rate training in grades two, four and six.

9. There is no significant relationship between the reading rate gains of students in the experimental groups and their interest in rate training in grades two, four, and six.

9. There is a significant relationship between the reading rate gains of students in the experimental groups and their interest in rate training in grades two, four, and six.

10. There is no significant relationship between the reading rate gains and chronological age of the experimental groups and the reading rate gains and chronological age of the control groups within grades two, four, and six.

10. There is a significant relationship between the reading rate gains differentiated by chronological age of the experimental groups and the reading rate gains and chronological age of the control groups within grades two, four, and six.

11. There is no significant relationship between means of the comprehension gains and chronological age of the experimental groups and the comprehension gains and chronological age of the control groups within grades two, four, and six.

11. There is a significant relationship between means of the comprehension gains and chronological age of the experimental groups and the comprehension gains and chronological age of the control groups within grades two, four, and six.

12. There is no significant difference between means of the November and May comprehension gains of the experimental and control groups in grades two, four, and six.

12. There is a significant difference between means of the November and May comprehension gains of the experimental and control groups in grades two, four and six.

13. There is no significant difference between means of the November and May reading rate gains of the experimental and control groups.

13. There is a significant difference between means of the November and May reading rate gains of the experimental and control groups.

Analysis of Data

A two-way analysis of variance technique, as described by Roscoe (1969:247) was used to analyze the data recorded from the rate and comprehension pre and post-tests. Gains were the criterion measure. Incorporated in the analysis of variance technique, the F test was used to determine whether or not satistically significant interaction existed within the cells at each grade level.

The analysis of covariance (Roscoe, 1969:258) was used to equate the groups on the independent variable of

IQ. For the F test the five per cent level of significance was accepted as indicating statistically significant differences.

To determine whether or not initial gains on rate or comprehension were sustained between the two post-tests, a t test for correlated samples was employed (Ferguson, 1966:170). For the t test the five per cent level of significance for a two-tailed test was required to indicate that a statistically significant difference existed.

Other variables correlated with gains, which were considered in the analysis of the data, were sex, age, and interest in the rate training among children in the experimental group. Coefficients of correlation (Roscoe, 1969: 254) were computed to determine whether or not significant relationships existed as a result of any of these variables. These data have been summarized in tables in chapter four.

Precautions Taken for Accuracy

The researcher hand-scored the standardized pre and post-tests. Another individual also scored them to avoid errors in the total scores.

The correlations, the t test for correlated samples, the analysis of covariance, and two-way analysis of

variance computations were performed by the Sigma Seven computer at Montana State University.

Summary

In seeking an answer to the question of whether six weeks of reading rate training had a favorable or unfavorable effect upon comprehension improvement, eighteen classrooms were selected from Havre, Montana, elementary schools by random sampling. Information about each child such as name, grade level, sex, age, and IQ score was collected from school records, since these variables were found by some researchers to affect reading rate and comprehension. Relationship of these factors to reading speed and comprehension improvement was considered as well as that of each child's interest in the rate training.

Standardized pre and post-tests of reading speed and comprehension were given. A six weeks reading rate training program was administered by the classroom teachers to the nine experimental classes during twenty minutes per day of the regular reading instruction time. The control group received an equal amount of reading instruction.

A two-way analysis of variance, analysis of covariance, and a t test for correlated samples, were employed to determine whether or not significant differences existed

among the means of various groups of scores in this study. Coefficients of correlation were computed to determine whether or not significant relationships existed between variables. Information obtained from these data has been organized and summarized in tables followed by descriptive statements of summary and recommendations for possible application of the results.

CHAPTER IV

PRESENTATION AND DISCUSSION OF THE DATA

Introduction

In this study pre and post-test gains of reading rate and comprehension constituted the dependent variable. A two-way analysis of variance was employed to determine whether or not a significant difference existed between the gains of the experimental and control groups. The sum of squares for total was partitioned into four parts: (1) sum of squares for columns, (2) sum of squares for rows, (3) sum of squares for interaction, and (4) sum of squares within (Roscoe, 1969:247). An example of a two-by-two table in which the experimental and control groups were represented in the columns, and the sex variable was represented in the rows, is shown in Figure 1.

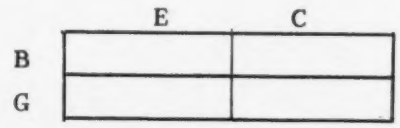


Figure 1. Two-by-Two Table

The analysis procedure was first to determine whether the computed value of F for interaction was greater than the tabled value. If a significant interaction was found,

the analysis was terminated. If no significant interaction was found, the test of main effects for columns, which represented the treatments, and the test of main effects for rows, representing the sex variable, were accomplished.

For the purpose of statistically (rather than experimentally) controlling the variable of IQ, the analysis of covariance was used to analyze the data. The groups were equated on the independent variable, IQ. Therefore, a significant F ratio indicated that a rate or comprehension gain by the experimental group was apparently the result of the effects of the rate training program. According to Roscoe (1969:255) the analysis of covariance consists essentially of determining that a proportion of the variance of the criterion existed prior to the experiment, and this portion is eliminated from the final analysis. With this procedure, any variable that influences the variation of the criterion may be controlled and the error variance in the analysis substantially reduced.

Standardized measures of reading rate and comprehension were administered to all subjects. Gains between pre and post-tests were the criterion. The sums of squares between groups, within groups, and for total were calculated, along with their respective degrees of freedom. The

sums of products between groups, within groups and for total were calculated. Adjusted sums of squares, degrees of freedom, and mean squares were calculated. When the F ratio was computed it was compared to the tabled value of F. If the calculated value exceeded the critical value of F, the null hypothesis was rejected and a significant difference in the adjusted means was determined to exist. The .05 level of significance was necessary to reject a null hypothesis.

The criterion measures, gains between the November and May post-tests, were obtained. According to Ferguson (1966:167) to test for significance of difference between the two means, the t test for correlated samples could be used to determine whether or not the mean difference over all pairs ($\overline{D}$) is significantly different from zero. If the computed value of t was higher than the critical value for a two-tailed test at the five per cent level of significance, the null hypothesis was rejected.

Coefficients of correlation (r) between reading rate gain and comprehension gain at each grade level were computed and compared to the tabled value of r. Responses on the interest rating scale were assigned a numerical rating with one being equated with no fun at all and five with

lots of fun. See Appendix G. Coefficients of correlation were also computed between interest in the rate improvement program and reading rate gain per grade level; between interest in the rate improvement program and comprehension gain per grade level; between chronological age within grade level and comprehension gain; and between chronological age within grade level and rate gain.

Abbreviated Entities

Sigma is used to refer to the standard deviation of a distribution.

Degrees of Freedom are shown in tables summarizing data as df.

The Critical Ratio in the t Test for Correlated Samples is shown as t.

The Sum of Squares is represented by SS_X.

The Sum of Products is represented as SP.

The Adjusted Sum of Squares is shown as SS_y

The Adjusted Degrees of Freedom is represented as df.

The Adjusted Mean Square is shown as MS_y.

The Critical Ratio in the two-way analysis of variance and in covariance is represented as F.

The Correlation Coefficient is referred to as r.

Tables in which the data are summarized are followed by discussion describing the results of this experiment.

Analysis of Data

Data are summarized in Table 1 from which the F ratio of interaction among the cells was computed. The computed value of interaction F was .78. Since that was not significant interaction, the analysis was continued to a test of main effects for columns--the effects of treatments in the experimental and control groups, and a test of main effects for rows--the sex variable.

For the test of main effects for columns the computed value of F was 1.06. Therefore, the conclusion was that there was no significant difference in comprehension between the two groups in the second grade. Null hypothesis number one was retained for grade two.

The computed value of F was .63 in the test of main effects for rows. Whereupon, it was concluded that no significant difference in comprehension gain was evidenced by either boys or girls in the second grade. Null hypothesis number two was retained for grade two.

TABLE 1

SUMMARY OF TWO-WAY ANALYSIS OF VARIANCE OF COMPREHENSION GAIN IN GRADE TWO

Source of Variation	df	Sums of Squares	Mean Squares	F
Between Columns (Treatment)	1	32.78	32.78	1.06
Between Rows (Sex)	1	19.58	19.58	.63
Interaction	1	24.20	24.20	.78
Within Cells	124	3,827.18	30.86	
Total	N 128			

Critical value of F, df= 1, 124 alpha = .05 is 3.93
*Significant at alpha = .05

Data are summarized in Table 2 from which the F ratio of interaction among the cells was computed. The computed value of interaction F was 3.12. Since there was not a significant interaction, the analysis was continued to a test of main effects for columns--the effects of treatments in the experimental and control groups, and a test of main effects for rows--the sex variable.

For the test of main effects for columns the computed value of F was 30.07. Therefore, it was concluded that a

significant gain in comprehension was evidenced by the experimental group at fourth grade. Null hypothesis number one was rejected for grade four.

Because the computed value of F was .49 in the test of main effects for rows, it was concluded that the fourth-grade comprehension gain was not differentiated by sex. Null hypothesis number two was retained for grade four.

TABLE 2

SUMMARY OF TWO-WAY ANALYSIS OF VARIANCE OF COMPREHENSION GAIN IN GRADE FOUR

Source of Variation	df	Sums of Squares	Mean Squares	F
Between Columns (Treatment)	1	2,683.84	2,683.84	*30.07
Between Rows (Sex)	1	43.62	43.62	.49
Interaction	1	278.66	278.66	3.12
Within Cells	124	10,532.05	89.25	
Total	N 128			

Critical value of F, df = 1, 124 alpha = .05 is 3.93
*Significant at alpha = .05

Table 3 summarizes data from which the F ratio of interaction among the cells was computed. The computed value

of F was .39 on the criterion of comprehension gain by the experimental group at the sixth-grade level. Since that was not a significant difference, the analysis was continued to a test of main effects for columns--the effects of treatments in the experimental and control groups, and a test of main effects for rows--the sex variable.

For the test of main effects for columns the computed value of F was 3.52. Therefore, it was concluded that there was no significant difference in comprehension between the two groups in the sixth grade. Null hypothesis number one was retained for grade six.

The computed value of F was 1.85 in the test of main effects for rows. Whereupon, it was concluded that no significant difference in comprehension gain was evidenced by either boys or girls in the sixth-grade. Null hypothesis number two was retained for grade six.

TABLE 3

SUMMARY OF TWO-WAY ANALYSIS OF VARIANCE OF COMPREHENSION GAIN IN GRADE SIX

Source of Variation	df	Sums of Squares	Mean Squares	F
Between Columns (Treatment)	1	227.74	227.74	3.52
Between Rows (Sex)	1	120.30	120.30	1.85
Interaction	1	25.52	25.52	.39
Within Cells	124	9,908.87	64.76	
Total	N 128			

Critical value of F, df = 1, 124 alpha = .05 is 3.93
*Significant at alpha = .05

Data are summarized in Table 4 from which the F ratio of interaction among the cells was computed. The computed value of interaction F was 1.43. Null hypothesis number three was retained for grade two. Since there was not significant interaction, the analysis was continued to a test of main effects for columns--the effects of treatments in the experimental and control groups, and a test of main effects for rows--the sex variable.

For the test of main effects for columns the computed value of F was .74. Therefore, it was concluded that there was no difference between the two groups at second grade in reading rate. Null hypothesis number three was retained for grade two.

The computed value of F was .03 in the test of main effects for rows. Whereupon, it was concluded that no significant difference in rate gain was evidenced by either boys or girls in the second grade. Null hypothesis number four was retained for grade two.

TABLE 4

SUMMARY OF TWO-WAY ANALYSIS OF VARIANCE OF READING RATE GAIN IN GRADE TWO

Source of Variation	df	Sums of Squares	Mean Squares	F
Between Columns (Treatment)	1	22.21	22.21	.74
Between Rows (Sex)	1	.98	.98	.03
Interaction	1	4.26	4.26	1.43
Within cells	124	3,709.81	29.92	
Total	N 128			

Critical value of F, df = 1, 124 alpha = .05 is 3.93
*Significant at alpha = .05

Data are summarized on Table 5 from which the F ratio of interaction among the cells was computed. The computed value of interaction F was 6.33. Therefore, the conclusion was that a significant gain in rate was evidenced by the experimental group in fourth grade at the .05 level of significance. Null hypothesis number three was rejected for grade four.

Because the computed value of F was .23 in the test of main effects for rows, it was concluded that the fourth-grade rate gain was not differentiated by sex. Null hypothesis number four was retained.

TABLE 5

SUMMARY OF TWO-WAY ANALYSIS OF VARIANCE OF READING RATE GAIN IN GRADE FOUR

Source of Variation	df	Sums of Squares	Mean Squares	F
Between Columns (Treatments)	1	1,222.70	1,222.70	*6.33
Between Rows (Sex)	1	44.31	44.31	.23
Interaction	1	524.44	524.44	2.71
Within cells	124	22,795.00	193.17	
Total	N 128			

Critical value of F, df = 1, 124 alpha = .05 is 3.93
*Significant at alpha = .05

Data are summarized in Table 6 from which the F ratio of interaction among the cells was computed. The computed value of interaction F was .65. Since that was not a significant difference, the analysis was continued to a test of main effects for columns--the effects of treatments in the experimental and control groups, and a test of main effects for rows--the sex variable.

For the test of main effects for columns the computed value of F was .74. Therefore, it was concluded

that there was no difference in reading rate between the two groups at sixth grade. Null hypothesis number three was retained for grade six.

The computed value of F was 2.59 in the test of main effects for rows. Whereupon, it was concluded that no significant difference in rate gain was evidenced by either boys or girls in the sixth grade. Null hypothesis number four was retained for grade six.

TABLE 6

SUMMARY OF TWO-WAY ANALYSIS OF VARIANCE OF READING RATE GAIN IN GRADE SIX

Source of Variation	df	Sums of Squares	Mean Squares	F
Between Columns (Treatment)	1	70.75	70.75	.74
Between Rows (Sex)	1	247.05	247.05	2.59
Interaction	1	61.92	61.92	.65
Within cells	124	14,586.01	95.33	
Total	N 128			

Critical value of F, df = 1, 124 alpha = .05 is 3.93
*Significant at alpha = .05

Data are summarized in tables 7 through 12 from which the F ratio was computed. Three significantly high F

ratios were found. In grades two and four, when the experimental and control groups were equated on IQ, the value of F for comprehension gain by the experimental group was above the critical value of F at the .05 level of significance. Therefore, null hypothesis number five was rejected for grades two and four and retained for grade six. Also, in grade four, the value of F pertaining to the reading rate gain in the experimental group was found to be above the tabled value of F. Therefore, null hypothesis number six was rejected for grade four and retained for grades two and six.

TABLE 7

SUMMARY OF ANALYSIS OF COVARIANCE OF IQ SCORES
WITH COMPREHENSION IN GRADE TWO

Source	df	SS_x	SP	SS_y	df'	SS'_y	MS'_y	F
Between	1	230.25	206.25	184.70	1	157.98	157.98	*6.11
Within	85	7,947.62	440.12	2,194.70	84	2,170.33	25.84	
Total	86				85			

Critical value of F, df = 1, 84 alpha = .05 is 3.96
*Significant at alpha = .05

TABLE 8

SUMMARY OF ANALYSIS OF COVARIANCE OF IQ SCORES
WITH COMPREHENSION IN GRADE FOUR

Source	df	SS_x	SP	SS_y	df'	SS'_y	MS'_y	F
Between	1	1,076.00	1,704.81	2,700.00	1	2,142.85	2,142.85	*23.98
Within	106	15,781.00	1,980.56	9,628.77	105	9,380.20	89.33	
Total	107				106			

Critical value of F, df = 1, 105 alpha = .05 is 3.93
*Significant at alpha = .05

TABLE 9

SUMMARY OF ANALYSIS OF COVARIANCE OF IQ SCORES
WITH COMPREHENSION IN GRADE SIX

Source	df	SS_x	SP	SS_y	df'	SS'y	MS'y	F
Between	1	251.00	173.69	120.55	1	146.16	146.16	2.31
Within	129	25,184.00	-1,862.81	8,228.60	128	8,090.81	63.21	
Total	130				129			

Critical value of F, df = 1, 84 alpha = .05 is 3.92
*Significant at alpha = .05

TABLE 10

SUMMARY OF ANALYSIS OF COVARIANCE OF IQ SCORES
WITH READING RATE IN GRADE TWO

Source	df	SS_x	SP	SS_y	df'	SS'y	MS'y	F
Between	1	118.75	31.62	8.42	1	1.92	1.92	.06
Within	77	6,661.94	917.99	2,677.12	76	2,550.63	33.56	
Total	78				77			

Critical value of F, df = 1, 105 alpha = .05 is 3.96
*Significant at alpha = .05

TABLE 11

SUMMARY OF ANALYSIS OF COVARIANCE OF IQ SCORES
WITH READING RATE IN GRADE FOUR

Source	df	SS_x	SP	SS_y	df'	SS'y	MS'y	F
Between	1	106.00	-1,369.56	1,758.71	1	1,886.73	1,886.73	*9.56
Within	102	14,950.00	1,383.50	20,057.05	101	19,929.01	197.32	
Total	103				102			

Critical value of F, df = 1, 101 alpha - .05 is 3.94
*Significant at alpha = .05

TABLE 12

SUMMARY OF ANALYSIS OF COVARIANCE OF IQ SCORES
WITH READING RATE IN GRADE SIX

Source	df	SS_x	SP	SS_y	df'	SS'y	MS'y	F
Between	1	150.00	93.31	58.05	1	55.55	55.55	.62
Within	127	25,752.00	304.06	11,332.98	126	11,329.39	89.91	
Total	128				127			

Critical value of F, df = 1, 127 alpha = .05 is 3.92
*Significant at alpha = .05

Correlation coefficients are listed in Tables 13 and 14 between rate and comprehension gain within specific subgroups for grades two and six respectively. The coefficients for the second-grade male control group, the total control group, and the sixth-grade female control group showed that an inverse relationship existed between rate gain and comprehension gain at the .05 level of significance for a two-tailed test. Therefore, the conclusion was that in some groups, where little or no emphasis was placed upon reading rate improvement, comprehension increased although rate decreased. Null hypothesis number seven was rejected for grades two and six.

TABLE 13

COEFFICIENTS OF CORRELATION BETWEEN READING RATE GAIN AND COMPREHENSION GAIN WITHIN SECOND GRADE GROUPS

Group	r	df
Male, Experimental	.16	60
Male, Control	-.28*	80
Female, Experimental	-.20	60
Female Control	-.13	48
Experimental	.01	122
Control	-.19*	130

*Significant at alpha = .05, two-tail

TABLE 14

COEFFICIENTS OF CORRELATION BETWEEN READING RATE GAIN AND COMPREHENSION GAIN WITHIN SIXTH GRADE GROUPS

Group	r	df
Male, Experimental	-.07	82
Male, Control	.10	70
Female, Experimental	.06	64
Female, Control	-.21*	90
Experimental	.10	148
Control	-.04	162

*Significant at alpha = .05, two-tail

No significant correlation between rate gain and comprehension gain was found among fourth-grade groups as shown on Table 15. Null hypothesis number seven was retained for grade four. However, as pointed out above, there were significant F ratios for reading rate gain and comprehension gain among experimental groups at the fourth-grade level.

TABLE 15

COEFFICIENTS OF CORRELATION BETWEEN READING RATE GAIN AND COMPREHENSION GAIN WITHIN FOURTH GRADE GROUPS

Group	r	df
Male, Experimental	-.19	68
Male, Control	.17	56
Female, Experimental	.04	58
Female, Control	-.20	54
Experimental	-.10	128
Control	.00	112

*Significant at alpha = .05, two tail

Children in the experimental groups rated their interest on the rate training program on a five point scale with one indicating low interest and five indicating high interest. Their ratings are reflected in the data in Tables 16 and 17. There were no significant coefficients of correlation at any grade level between interest and comprehension gain immediately following the six-weeks rate improvement program. Therefore, null hypothesis number eight was retained for grades two, four, and six. A significant, inverse correlation between interest in rate improvement and comprehension was found among fourth graders when the

post-test was administered in the spring. Therefore, null hypothesis number nine was rejected for grade four and retained for grades two and six. Although interest was high in rate improvement, this interest apparently did not affect rate or comprehension gain during the rate training period.

However, the reader is again reminded that there was significant gain among fourth-grade experimental groups on both rate and comprehension.

TABLE 16

COEFFICIENTS OF CORRELATION BETWEEN INTEREST IN RATE IMPROVEMENT AND READING RATE GAIN IN EXPERIMENTAL GROUPS

Group	r		df
	November Post-Test Gain	May Post-Test Gain	
Grade 2	-.12	.10	60
Grade 4	.24	-.21	63
Grade 6	.09	-.12	72

*Significant at alpha = .05, two-tail

TABLE 17

COEFFICIENTS OF CORRELATION BETWEEN INTEREST IN RATE IMPROVEMENT AND COMPREHENSION GAIN IN EXPERIMENTAL GROUPS

Group	r		df
	November Post-Test Gain	May Post-Test Gain	
Grade 2	.19	.12	60
Grade 4	.14	-.47*	63
Grade 6	-.09	.07	72

*Significant at alpha = .05, two-tail

As can be seen from the summary of the data in Tables 18 and 19, only one correlation coefficient (r) exceeded the critical value. Therefore, null hypothesis number ten pertaining to variation of chronological age within grade level and reading rate gain was retained for grades two, four and six. However, variation in age within the second-grade experimental group showed an inverse relationship to comprehension gain. On a two-tailed test, with degrees of freedom 58 and alpha = .05, the critical value of r is +0.25 or -0.25 as compared with the computed value which is -.36. In the second-grade experimental group, following six weeks of rate training, as the chronological age increased comprehension gain decreased.

Therefore, null hypothesis number eleven was rejected for grade two and retained for grades four and six.

In both the experimental and control groups the computed coefficients showed an inverse correlation between age within grade level and comprehension gain, although only one, in the grade two experimental group, exceeded the critical value at the .05 level of significance. Since a positive correlation would logically be expected between age and comprehension gain, further studies are needed in which to explore the effects upon comprehension of age variation within grade level.

TABLE 18

COEFFICIENTS OF CORRELATION BETWEEN CHRONOLOGICAL AGE AND COMPREHENSION GAIN WITHIN GRADE LEVELS

Group	r	df
Grade 2, Experimental	-.37*	58
Grade 2, Control	-.20	64
Grade 4, Experimental	-.09	65
Grade 4, Control	-.06	55
Grade 6, Experimental	-.02	73
Grade 6, Control	-.11	80

*Significant at alpha = .05, two-tail

TABLE 19

COEFFICIENTS OF CORRELATION BETWEEN CHRONOLOGICAL AGE AND READING RATE GAIN WITHIN GRADE LEVELS

Group	r	df
Grade 2, Experimental	-.10	58
Grade 2, Control	-.23	64
Grade 4, Experimental	.07	63
Grade 4, Control	.02	55
Grade 6, Experimental	-.12	73
Grade 6, Control	.03	80

*Significant at alpha = .05, two-tail

A second post-test was administered in May to determine whether gains evidenced on rate and comprehension improvement in November were sustained until May. The computed values of t for these data are summarized on Tables 20 and 21. The tabled value of t, degrees of freedom is 60 and alpha = .05 for a two-tailed test is 2.00. Since none of the computed values of t exceeded the critical value, null hypotheses numbers twelve and thirteen were retained for grades two, four, and six. There was no decline shown on either rate or comprehension between November and May by the control or experimental group at any grade level.

TABLE 20

SUMMARY OF t TEST FOR CORRELATED SAMPLES
OF SUSTAINED COMPREHENSION GAIN

Group	df	Mean of two Differences	Sigma	t
Grade 2, Experimental	61	9.59	6.03	1.59
Grade 2, Control	65	6.85	6.35	1.08
Grade 4, Experimental	64	7.92	7.36	1.08
Grade 4, Control	56	9.79	6.51	1.50
Grade 6, Experimental	74	8.04	7.35	1.09
Grade 6, Control	81	5.47	7.32	.75

*Significant at alpha = .05

TABLE 21

SUMMARY OF t TEST FOR CORRELATED SAMPLES
OF SUSTAINED READING RATE GAIN

Group	df	Mean of two Differences	Sigma	t
Grade 2, Experimental	58	7.37	8.02	.93
Grade 2, Control	60	5.09	5.26	.97
Grade 4, Experimental	57	.33	14.65	.02
Grade 4, Control	51	6.23	14.37	.43
Grade 6, Experimental	66	1.63	11.76	.14
Grade 6, Control	77	3.43	11.05	.31

*Significant at alpha = .05

Summary of Data

This study was concerned with the question of whether or not a six weeks reading rate training program in grades two, four, and six effected any significant change in rate or comprehension.

In grade four the experimental group evidenced both a rate and comprehension gain significant at the .05 level of significance in November. When the experimental and control groups in grade four were equated on the variable of IQ the significant differences in rate and comprehension gain remained. Those gains were not shown to have declined between November and May.

In grade two, when the experimental and control groups were equated on the variable of IQ, the November comprehension gain in the experimental group was found to be significantly higher than the comprehension gain in the control group, although no significant rate gain was apparent. The grade two comprehension gain was not shown to have declined in May.

The null hypothesis pertaining to variation of chronological age within grade level and reading rate gain was retained. However, variation of age within the second-grade experimental group showed an inverse relationship to

comprehension gain. As the chronological age increased, comprehension gain decreased.

None of the differences described above were differentiated by the sex variable or affected by the interest factor at either grade level according to the results of the data analysis in November.

No correlation was found to exist between rate gain and comprehension gain at any grade level in the experimental group. However, an inverse relationship was found to exist between rate gain and comprehension gain for second-grade total, second-grade male, and sixth-grade femal control groups.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The need to increase one's reading rate in our present society has been pointed out by Holmes (1962:143) as a basis for considering the merit of training children in the elementary school to improve their rate of reading. Little emphasis upon training to increase rate of reading was noted in the elementary school (Weintraub, 1968). A related question considered was whether or not increasing rate of reading would favorably or adversely affect improvement in comprehension of reading content.

Review of the literature revealed that additional research pertaining to rate development was indicated. During this century attitude has changed regarding the possibility of more rapid reading without comprehension loss. Previously the assumption was that slow, laborious reading produced the optimum in comprehension. Recent research indicated that this assumption was incorrect and that reading rate can be increased without comprehension loss. Reading rates were reported ranging from 1,000 words per minute to 40,000 words per minute with improved comprehension. However, some researchers pointed out a physical limitation which precludes the possibility of attaining excessive reading rates. Studies revealed sex and IQ to be correlates of reading achievement.

A six weeks reading rate training program was completed by the three experimental classes randomly selected in each of grades two, four, and six in Havre, Montana, schools. Standardized pre and post-tests of reading rate and comprehension were administered to the nine experimental classes and the nine control classes in September and November 1970, and May 1971. Gains were computed to determine what effect increase in rate of reading had upon comprehension improvement.

Children in the experimental group rated their interest in the rate improvement program on an interest rating scale. Information about each child collected from school records was name, age, IQ score, and sex. Other relationships were explored such as degree of correlation between IQ scores and amount of reading rate increase, and between IQ scores and comprehension gain; between sex and reading rate and comprehension gain; and between age and reading rate and comprehension gain within grade level.

A two-way analysis of variance, analysis of covariance, a t test for correlated samples, and correlation were employed to determine whether or not significant differences existed among various groups of gains in this study. A two-way analysis of variance was employed to determine

whether or not a significant difference existed between the rate and comprehension gains of the experimental and contol groups. For the purpose of statistically (rather than experimentally) controlling the variable of IQ, the analysis of covariance was used. The t test for correlated samples was employed to test for level of significance between the means of the November and May post-tests. Coefficients of correlation (r) were computed and compared to the tabled value of r per grade level between reading rate gain and comprehension; between interest in the rate improvement program and comprehension and reading rate gain; between chronological age and comprehension gain; and between chronological age and rate gain. Information obtained from these data was organized and summarized in tables followed by descriptive statements of summary and recommendations for possible application of the results.

Conclusions

Results of this study indicated that pupils in the grade two experimental group made a significant gain in comprehension following six weeks of reading rate training in autumn. In grade four the experimental group evidenced both a rate and a comprehension gain significant at the .05 level of significance. When the experimental and control

groups were equated on the variable of IQ, the significant differences in rate and comprehension gain in grades two and four remained. None of these differences appeared to be differentiated by sex, affected by the interest factor, or by variation of chronological age within grade level during the rate training period, with one exception. Variation of age within the second grade experimental group showed an inverse relationship to comprehension gain. As the chronological age increased, comprehension gain decreased. Furthermore, these differences were not shown to have declined in May.

No correlation was found to exist between rate gain and comprehension gain at any grade level in the experimental group. However, an inverse relationship was found to exist between rate gain and comprehension gain for second-grade total, second-grade male, and sixth-grade female control groups.

Recommendations

It was recommended, therefore, that Havre elementary school teachers and administrators, as well as textbook publishers, whose reading materials are used in Havre, may wish to give more consideration to a greater emphasis on the rate factor when planning reading curriculums,

particularly at the grade levels two and four. Additional studies were recommended from which to broaden the knowledge base pertaining to rate development and the concomitant effects upon comprehension improvement.

Suggestion was made that subsequent studies might be concerned with some of the following questions:

> Would a similar increase in rate and comprehension accrue if rate training were repeated in the spring or if continued the entire school term?
>
> Would students in grades one, three, five, seven, and eight benefit from a similar reading rate improvement program?
>
> Would sixth-grade students show a rate or comprehension increase if mechanical devices such as calibrated tachistiscopes or controlled readers were used?

Replication of this study in other geographical locations may be worthwile.

In both the experimental and control groups the computed ccefficients showed an inverse correlation between age within grade level and comprehension gain, although only one, in the grade two experimental group, exceeded the critical value at the .05 level of significance. Since a positive correlation would logically be expected between

age and comprehension gain, further studies are needed in which to explore the effects upon comprehension of age variation within grade level.

Furthermore, although interest was high in rate improvement in the experimental group, this interest apparently did not affect rate or comprehension during the rate training period. Additional exploration of the relationship between desire to read faster and reading improvement may be of value.

APPENDIXES

APPENDIX A

Rate Training Materials

LESSON ONE

Value and Possibility of Rapid Reading

If we could read faster without loss of comprehension or even with increased comprehension we could read more. Reading is fun, isn't it? By reading more we can learn more and thereby have a richer, more enjoyable, and satisfying life. We can travel via the printed page and visit places and experience feelings and happenings without leaving our armchair. The faster we learn to read the more of such interesting trips we are able to take.

As we grow older and attend high school and college our reading efficiency will have much effect upon our success and grades there.

How many of you would like to read faster and know all that you had read about when you are finished? Raise your hand if you would. Do you think you can read faster? How fast is fast? How many words do you suppose you read in one minute? Many adults read about 250 words per minute. I am going to time your reading and help you to compute your rate. Then we will ask you questions to find out how well you remember what you read.

Some people have learned to read at astounding rates. Theodore Roosevelt read a book every day, sometimes reading while traveling on horseback. Former President, John Kennedy, read 1,000 words per minute. Most people can easily double their reading rate without comprehension loss.

One twenty-year-old student learned to read at 40,000 words per minute with an increase in comprehension. There are numerous speed reading courses which adults attend. But, not many grade school children are taught to read at above-average rates. A five-year-old girl is reported to have reached the incredible rate of 6,000 words per minute.

At the University of Florida Dr. Robert Zetler teaches an adult speed reading course. His nine-year old son reads at 1,000 words per minute. Dr. Zetler claims that the method can and should be taught to young children. So, we will be talking more about how to learn to read faster and we will practice the skills involved.

Second Grade

with me

see him

see him

go out

looks funny

she called

you can

he said

in the house

come right back

all right

walk this way

get down

Fourth Grade

when he saw

could go along

they were going

that beautiful house

saw him there

looked at them

make him want

many nights afterward

walk off together

as he hurried

she was walking

one would ride

Sixth Grade

would you

man or woman

worked part time

as any man

just isn't right

a tremendous interest

could not earn

say he approved

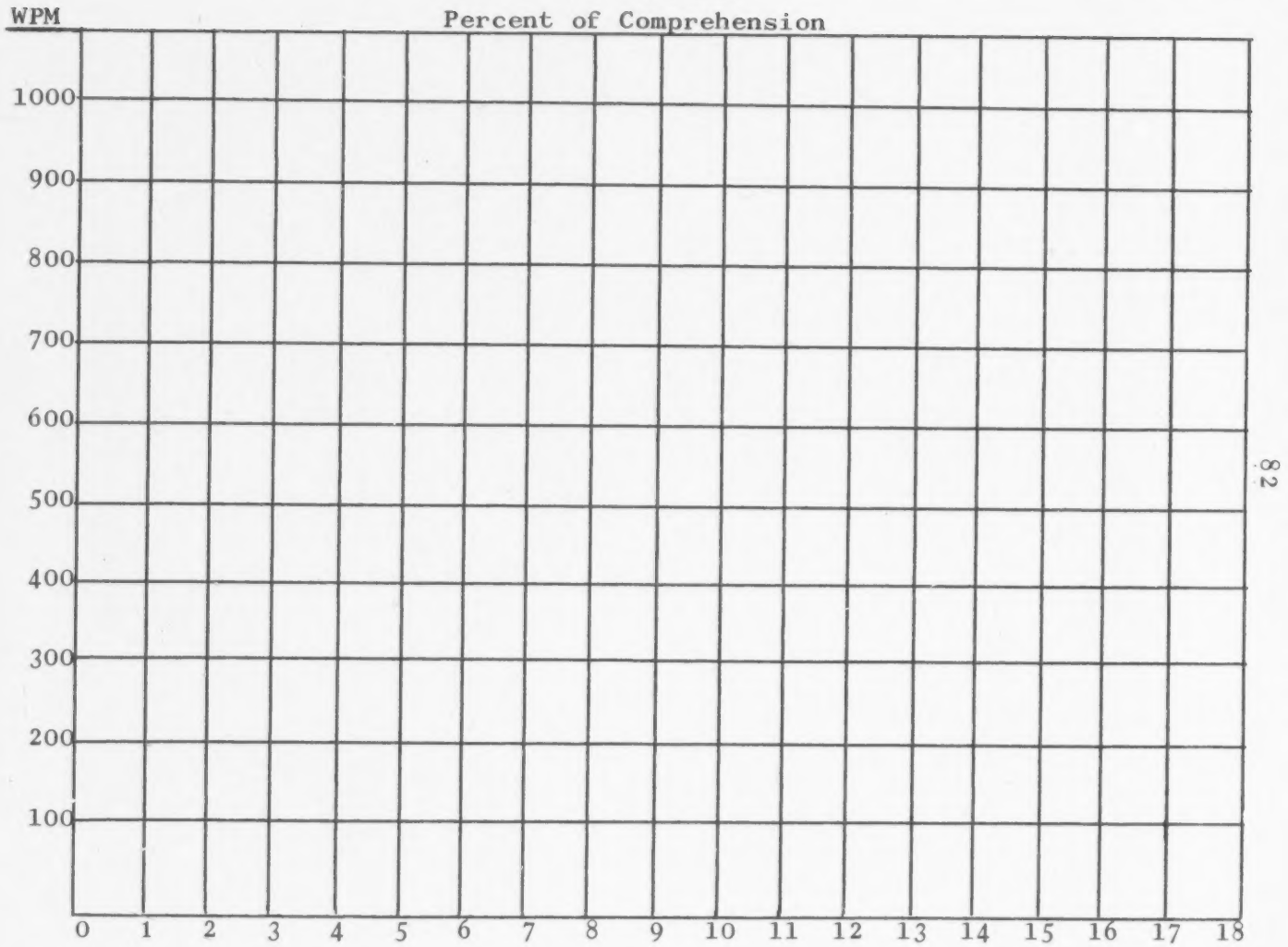
the simplest operations

trees and heavy vines

almost as shocked

someone will

PROGRESS CHART



APPENDIX B

Rate Training Materials

LESSON TWO

Visual Imagery

Today we will consider some ways in which we can improve our rate of reading. Reading is more than just translating the writing into talk. It includes understanding and remembering ideas read. Therefore, visual imagery is a great help in reading. Do you know what we mean by visual imagery? It is the ability to think in shapes. Can you visualize how your name looks in print? Can you mentally "see" the height and shape of the letters? Use your finger and write your name on your desk. Think about its shape. Try to mentally visualize it in the little "television set" in your head.

Visual imagery includes not only thinking in shapes but mentally "seeing" light and dark as well as color. When you close your eyes of course you see darkness. But, how many of you can think of how your mother looks and visualize her face with your eyes closed? Raise your hands if you can.

Visual imaging also includes movement. No doubt each one of you has had dreams in which you heard people talking and could watch them move about. Maybe some of your

dreams were in color. These are the kinds of images that you should make when you read. Rather than being aware of words on a page your mind should be developing pictures of the sights, sounds, smells, and feelings that the words describe which you are reading. And you should place yourself right in the action wherever you would like to be. That is the kind of reading that is exciting and fun to do. How many of you make that kind of mental pictures in your head as you read? Let me see the hands raised. Let us try to make more mental pictures as we read today.

Second Grade

easy way

go to sleep

I will get

all the time

can go back

up the street

at the house

to tell us

be right back

look at me

pretty girl

Fourth Grade

are very gentle

we had stayed

for the playground

you don't want any

should ask you to

that every time

out of your shell

came running back

the first time since

sighed and shook

been able to walk

often taken him up

Sixth Grade

on this weather

like nothing at all

waiting on the porch

swinging their lanterns

a limited method

old family friends

cast a shadow

just can't be done now

up there beyond

it soon turned out

end of the following summer

it might be

APPENDIX C

Rate Training Materials

LESSON THREE

Eye Span

We talked about visual imagery. Who can tell us a little about your success in seeing what you read just as though it were a movie reeling by right in front of you? (Take a few minutes for discussion and sharing of success in this important area.)

Another important sub-skill in reading faster has to do with how many words we can see at one glance, or the width of one eye span. If we look at every little word separately we are slow, plodding readers. We can easily see and think of several words at once. So, if we continue to look at only one word at a time we are continuing a bad habit. We can learn to read by phrases at least. Some people claim to be able to read a page at a glance. How would you like to do that?

We will be reading more phrases together orally and saying them faster than we ordinarily talk using a lot of expression just like we talk. They will be flashed briefly for us to read at a glance.

Second Grade

every day

let me have it

said to her mother

away from here

began to read fast

near your door

to make something

in the big chair

one more good thing

go home now

with all the toys

it fell down

Fourth Grade

about his own size

our green hill

very close to tears

come along with

precious telescope

leaving him alone

you have to stop

you know

were giving orders

won't even try it

goat's milk

appeared even higher

93

Sixth Grade

standing in the doorway

a clever arrangement

soon came to know

for the projects

find a clue

enlisted in the army

as best he could

but when he was still

to stay in one place

was very young

into a vast empty plain

really makes a difference

APPENDIX D

Rate Training Materials

LESSON FOUR

Fixation Time

We have talked about visual imagery and about increasing our width of eye span.

Not only should we see more than one word at a glance or eye fixation, but we should not fix our eyes too long on each group of words. Just a quick glance is all that is necesaary if we know most of the words we are reading or know all of the sounds that make up the words. We can get into the habit of moving our eyes along with only a slight pause at each fixation. We see only when the eyes are stopped. We do not see when they are moving. Reading involves many starts and stops in eye movement. So, the more words we see at each stop and the shorter time spent per stop the faster we can think in pictures of what the words remind us.

If any of you are unable to visualize what you read please gather with me and we will practice. Teacher could read from one of the selections in the Reader's Digest Skill Builder or other selections that they have already read while the children listen with closed eyes attempting to see the characters, their movement, hear the sounds, see the colors, feel their emotions or the wind or whatever is

being read about. Draw the children into a discussion of these items about this selection. Then re-read the story again for them to listen with their eyes closed, but not too tightly or all they will see is stars, and practice visualizing again.

Second Grade

in surprise

work faster

eat all day

spring is here

you are not

to get in the car

show is over

have you had

began to laugh

to look at things

nothing at all

we find them

Fourth Grade

caught sight of

can leap forward

get others to come

a gay, friendly party

would like to

a jealous bird

in great big hats

home from town

when they reached

bring him in again

look just a little bit

all alone

99

Sixth Grade

his home base

did not come easy

a narrow escape

my cousin lives

all here except one

silence for a moment

over the fallen logs

among yourselves

deep shadows

have lived very well

fluttered his tail

will be happier here

APPENDIX E

Rate Training Materials

LESSON FIVE

Regression

We have talked about visual imagery, width of eye span, and time per fixation. Is there anyone who does not remember what we mean by these terms? (Take time for a brief discussion if some have questions)

Today we will add one more skill to our list. As our eyes move along a line of print from left to right we should keep them moving and keep them from skipping any words because leaving out even a little word sometimes changes the meaning a lot, doesn't it? If we are reading along and things aren't making much sense sometimes we have to back up and re-read a few words to get the sense of it. This moving our eyes back to the left to re-read is called regression. Let us really concentrate on the ideas and visual images of what we're reading. This will help us not to overlook any words and we will get into the habit of reading ahead toward the right automatically. Rapid readers do not have time for regression in reading. The only time that our eyes should move toward the left is when they reach the end of a line and must make a fast and accurate return sweep to the left of the very next line of print.

Bear in mind that you are not really reading unless you know about the ideas you have read when you are finished.

Second Grade

with me

put out the fire

maybe it is

get out of here

the next day

after all our work

in no time at all

children are jumping

did not want

many good things

in our yard

into the bedroom

103

Fourth Grade

in the paper

all through the night

tried to pretend

was just right

visit this part

up the stairs

were so still

said that they were

in a minute

as fast as you can

quite a difference

pick up some nuts

104

Sixth Grade

must be good neighbors

bring them to mind

so much water

count their feet

loyal and unafraid

running on time

only a grin

would rather be at home

after that

loved to talk

tangled in the ropes

voice rang clearly

APPENDIX F

Rate Training Materials

LESSON SIX

Sub-Vocalization

What are some of the skills we have learned about that can help us improve our reading habits? (Yes, visual imagery, width of eye span, time per fixation, and no regression.)

Today we are going to learn about sub-vocalization. That is a big word isn't it? It is very important too. If you are vocal you talk a lot. When you first learned to read in the first grade you read every story aloud to the teacher didn't you? Then, you learned to read silently using just your eyes to read, never pointing with your finger or whispering each word nor even just lip-reading without whispering. These are all forms of sub-vocalization. Any of them will slow you down in reading. Your eyes can move much faster than your finger can move from word to word. You can think of ideas from words much faster than you can say each word. You do not need to pronounce every word nor hear every word in inner speech within your head to gain the ideas written on the page. Just move your eyes along seeing the words but not thinking the words - only thinking or visualizing the happenings or ideas they describe.

Very soon you will break the "sound barrier" of our language. You will read silently much faster than you could possibly speak.

Second Grade

lost this book

come along and ask

a new way

with the other

are you going

was very happy

a long time

to find out who

no school today

run and get them

to help you

the end

109

Fourth Grade

came from different lands

for the first time

in the village

chance to rest

becoming dried out

outside the cottage

a pair of long stockings

then one day

that was just what

with beautiful things

wish shall be granted

look after it

that is all

Sixth Grade

offered them friendship

a waste of time

they had made

filled with hope

arranged in different ways

seized with confusion

of his generosity

arousing public interest

suddenly a wonderful idea

saving our pennies

impulse to fly away

the end of the line

APPENDIX G

Interest Rating Scale

NAME_____ GRADE_____

PLEASE PLACE A CHECK BY YOUR CHOICE BELOW.

Working to learn to read faster

_____was no fun at all.

_____was not much fun.

_____was a little fun.

_____was quite a bit of fun.

_____was lots of fun.

APPENDIX H

Teacher Training Session

Teacher Training Session

Introduction

(The researcher followed the outline below during the training session for teachers who participated in the study.)

Your classes have been selected through a random sampling procedure to participate in this study. The purpose of this study is to try to determine what effect training to increase rate of reading has upon improvement in comprehension. Other factors which will also be considered in relation to reading improvement are sex, IQ, age, and interest in the rate training. The training is to be given to nine experimental groups--three in each of grades two, four, and six for twenty minutes per day. Three other groups at each grade level will be control groups. The rate training will be administered three days per week for six consecutive weeks. Standardized pre-tests and post-tests will be given by each classroom teacher to the nine experimental groups and the three control groups.

Results of the study will be made available if you are interested in them.

Materials

I. Tests

A. Hand out tests and manuals of instructions.

B. Read over instructions with them.

C. Give a demonstration of a simulated testing situation.

D. Explain and demonstrate how to time the silent timed reading section.

E. Answer their questions.

F. Additional tests will be delivered to you before the next testing date in October.

II. Oral Phrasing Transparencies

A. Hand out transparencies for each class. (See samples in Appendixes A-F.)

B. Explain their purpose.

C. Flash each phrase tachistisocopically through the overhead projector allowing only a brief glance.

D. Demonstrate this technique.

E. Answer questions.

F. All nine experimental groups will use these phrases three days per week for six consecutive weeks.

III. Reader's Digest Skill Builders

A. Hand out booklets and manual for each class of experimental groups.

B. Read over instructions with them.

C. Give explanation and demonstration of their use.

D. Answer questions.

E. Hand out progress charts for children and explain their use. This is a motivational device.

F. The children are to enter their rate score and comprehension score after each timed reading and comprehension check.

G. All nine experimental groups will do step III three days per week for six consecutive weeks.

Rate Training Schedule

Step I

On Tuesday, September 22, 1970, to second-grade nine control and nine experimental groups will be administered by each classroom teacher Pupil Progress Series Diagnostic Reading Test, only parts II and III or Test sections 4, 5, 6, and 7 of form A, level I during the morning.

On Tuesday, September 22, 1970, to fourth- and sixth-grade nine experimental groups and nine control groups will be administered by each classroom teacher Pupil Progress Series Diagnostic Reading Test only parts II and III or test sections 5 through 10 of form A of the Elementary test during the morning.

Step II

A. The three control groups will not be involved in step II and III, but will do steps IV and V.

B. All nine experimental classes will do the following during the morning each of three days per week for six consective weeks beginning September 23, 1970.

First Week:

1. Each teacher will present the material orally from Appendix A entitled - Lesson I and allow

discussion for approximately five minutes per day.

2. Class say oral phrase material for appropriate grade level from Appendix A as it is flashed tachistiscopically from the overhead projector for approximately five minutes per day. Class say phrases in unison faster than rate of ordinary speech with good expression.
3. In approximately ten minutes per day administer the timed reading of a selection new to the children in the Reader's Digest Skill Builders, which are supplied, after explaining new words as manual directs.
4. Administer comprehension check which follows. (They write answers from memory as manual directs.)
5. Children graph speed and comprehension scores on chart provided.

Second Week:

Use some procedure as first week except use materials from Appendix B.

Third Week:

Use same procedure as first week except use materials from Appendix C.

Fourth Week:

Use same procedure as first week except use materials from Appendix D.

Fifth Week:

Use same procedure as first week except use materials from Appendix E.

Sixth Week:

Use same procedure as first week except use materials from Appendix F.

Discontinue the rate training program until after May 4, 1971.

List teachers' names below who are to do step II.

1. Green, Frances
2. Toulouse, Marge
3. Morigeau, Edith
4. Rorvig, Betty
5. Meilwald, Roberta
6. Caussyn, Joan
7. Contiz, Evelyn
8. Kent, Lois
9. Jensen, Kenneth

Step III

In all nine experimental classes help children to fill out the interest Rating Scale found in Appendix G on Tuesday, November 3, 1970, just before the standardized post-test is administered.

Step IV

On Tuesday, November 3, 1970, all eighteen classes repeat step I during the morning. Tests will be delivered to you the previous week.

Step V

On Tuesday, May 4, 1971, all eighteen classes repeat step I during the morning. Tests will be delivered to you the previous week.

Comments:

The reliability of the results of this study depends upon you. No doubt your professional attitude will insure that the schedule sheet will be adhered to to the best of your ability. If, for some reason, any deviations occur please be sure to jot them down with the child's name and include these notes with the tests when they are finished. Your assistance with these training sessions is greatly appreciated.

These procedures may seem overwhelming to you at first, but each one is really a simple procedure. After the first few days they should not seem complicated at all. If you have any questions later, even one that seems insignificant, please do call and ask it. It is intended that participation

in this study should be stimulating and enjoyable to you and of benefit to your pupils. My office phone number is 265-7821 and my residence number is 265-9104.

Mrs. S. Louise Thomas

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